STATE BORDER GUARD SERVICE OF UKRAINE
Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine

APPROVED
Rector of the National Academy of the State Border Guard Service of Ukraine
Major General O. Shynkaruk

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EDUCATIONAL PROGRAM

the first (Bachelor's) level of higher education

Specialty 172 "Telecommunications and Radio Engineering"
Branch of knowledge 17 "Electronics and Telecommunications"

Qualification: "Bachelor of Telecommunications and Radio Engineering"

Professional qualification "Officer of tactical level"

PASSED BY
the Academic Council of the Academy
(Protocol No___ of "___" _____ 201__)

Khmelnytskyi 2018

PREFACE

Developed by the working group consisting of:

1. Chesanovskyi Ivan Ivanovych - Candidate of Science (Tech.), Associate Professor, Head of the Department of Telecommunications and Radio Engineering of the Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (head of the project team - guarantor of the educational program).

2. Katerynchuk Ivan Stepanovych – Laureate of the State Prize of Ukraine in the field of science and technology, Honored Worker of Education of Ukraine, Doctor of Technical Sciences, Professor, Professor of the Department of Telecommunications and Radio Engineering of the Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (member of the project team).

3. Babii Yuliia Oleksandrivna – Candidate of Technical Sciences, Associate Professor of the Department of Telecommunications and Radio Engineering of the Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (member of the project team).

Reviews of external stakeholders are provided by:

1. Kyrii Oleh Anatoliiovych - Deputy Director of the Department - Head of Communications Division - Chief of Communications of the Administration of the State Border Guard Service of Ukraine.

2. Prudyus Ivan Nykyforovych - Director of the Institute of Telecommunications, Radioelectronics and Electronic Engineering of Lviv Polytechnic National University , Doctor of Technical Sciences, Professor.

3. Kychak Vasyl Martynovych - Dean of the Faculty of Infocommunications, Radioelectronics and Nanosystems of Vinnitsa National Technical University, Doctor of Technical Sciences, Professor.

4. Figura Oleh Volodymyrovych – Deputy Director of the Department, Head of the Professional Training and Organization of Educational Activities Division of the Department of Personnel of the Administration of the State Border Guard Service of Ukraine, Candidate of Pedagogical Sciences, Associate Professor.

Profile of
the educational program in the specialty of
172 “Telecommunications and Radio Engineering”

1. General information	
Full name of higher educational institution and structural unit	Bohdan Khmelnytskyi National Academy of the State Border Guard Service. of Ukraine the Department of Telecommunications and Radio Engineering
Degree of higher education and the name of the qualification in the language of original	Bachelor of Telecommunications and Radio Engineering. Officer of tactical level.
Official name of the program	Telecommunications and Radio Engineering
Type of diploma and program volume	Single, 240 ECTS credits, 3 years 10 months of study.
Accreditation available	No Accreditation
Cycle/Level	National Qualifications Framework of Ukraine – level 7, FQ-EHEA – cycle 1, EQF-LLL – level 6.
Preconditions	Full secondary education, vocational, professional education pre higher education.
Language (-s) of teaching	Ukrainian
Validity of the educational program	Accreditation 2020.
Internet address of permanent location for the description of the educational program	http://www.nadpsu.edu.ua
2. The purpose of the educational program	
Provide education in the field 17 "Electronics and Telecommunications" in the specialty of Telecommunications and Radio Engineering, which provides the formation of professional competence of specialists in the field of telecommunications and radio engineering, aimed at the ability to solve specialized tasks in the development and operation of telecommunication systems and communication facilities with employment in the State Border Guard Service of Ukraine. Training of officers at the tactical level who are competent in the border guard units command and are personally responsible for their actions and capable of further training with high level of autonomy.	
3. Characteristics of the educational program	
Subject area (branch of knowledge, specialty, specialization)	Branch of knowledge 17 "Electronics and Telecommunications" Specialty 172 “Telecommunications and Radio Engineering”
Orientation of the educational program	The educational program is focused on the formation of professional competencies of specialists in the field of telecommunications and radio engineering, aimed at the ability to solve the specialized tasks of designing and operating telecommunication systems, as well as the competencies necessary to solve the urgent tasks of border protection at the tactical level.
The main focus of the	Emphasis on the ability to perform development, technical design,

educational program and specialization	operation and service of radio electronic devices and telecommunication systems. Key words (in specialty): telecommunication systems, radio engineering, designing, operation, automated control systems, radio engineering systems, electronics, circuit engineering, modeling. Key words (for the MPC unit): operative and service activity, border guard unit, state border security and sovereign rights of Ukraine in its exclusive (maritime) economic zone.
Particularities of the program	Realized in an active research environment, oriented to real projects, implementation of the program of international academic mobility of participants in the educational process, require military training (training practice) in the state border guard units.
4. Employability of graduates and adaptivity for further education	
Employability of graduates	First assignments after graduation are positions of the officers of the communications and automation units of the State Border Guard Service of Ukraine (other military formations formed in accordance with the laws of Ukraine) according to the military specialties: 1203003, 1215003, 5311003, 1210003, 3006003, 5302003 in accordance with the Order of the Head of the State Border Guard Service of Ukraine dated of September 25, 2007 No. 751 For Official Use Only "On approval of lists of military specialties and levels of education of officers of the State Border Guard Service of Ukraine"
Further training	Opportunity to continue studying according to the second cycle of higher education (National Qualifications Framework of Ukraine – level - 8 level, FQ-EHEA - second cycle, EQF-LLL - 7 level) with a professional qualification officer of the operational-tactical level.
5. Teaching and assessment	
Teaching and training	Passive (explanatory and illustrative) and active (problem, interactive, project, informational and computer self-developing) learning technologies - by dominant methods and means. Collective and integrated learning technologies - by organizational forms. Technologies of positional and context learning, technology of cooperation - on the orientation of pedagogical interaction.
Assessment	Forms of control: oral and written questioning, tests (including computer testing), results presentation of practical in-service training (practice), reports for individual tasks, modular tests, credits, differentiated credits, examinations, certification (qualification work defence). Assessment of educational achievements is carried out as: - current control – according to the four-point scale ("excellent", "good", "satisfactory", "unsatisfactory"), verbal scale ("credited", "not credited"); - the final control – according to the four-point scale ("excellent", "good", "satisfactory", "unsatisfactory"), ECTS scale ("A", "B", "C", "D", "E", "FX", "F"); 100-point scale; verbal scale ("credited", "not credited").

6. Program competencies	
6.1. Integral competence	
IC-01	Ability to solve complex specialized tasks and practical problems in professional activity aimed at creation of conditions for the exchange of information at a distance, its processing and storage, including technological systems and technical means, which ensure reliable and high-quality transmission, reception, processing and storage of various signs, signals, written text, images, sounds, optical, electrical, radio and other systems, the application of electromagnetic vibrations and waves in radar and radio navigation for controlling and operating machines, mechanisms and technological processes of electronic, medical equipment, measuring devices and systems, which implies the application of certain theories and methods of the corresponding science and is characterized by complexity and uncertainty of the conditions.
6.2. General competencies	
GC-01	Ability to act socially and consciously on the principles of patriotism and statehood, to have a public position based on democratic beliefs, humanistic and ethical values.
GC-02	Ability to oral and written business communication in state and foreign languages for communication in professional, socio-cultural spheres, knowledge of professional terminology. Ability to consciously lifelong improvement and enlargement of communicative skills in a professional area.
GC -03	Ability to abstract thinking, analyzing, synthesizing and forecasting.
GC -04	Ability to identify, set and solve problems, apply knowledge in the process of professional activity in practical situations, understand and use ideas and thoughts and generate new ideas.
GC -05	The skills of using information and communication technologies, the ability to learn and master modern knowledge.
GC -06	Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity).
GC -07	Ability to search process and analyze information from various sources.
GC -08	Ability to work in a team using interpersonal skills, appreciation and respect for diversity and multiculturalism, to motivate people and move towards a common goal.
GC -09	. Ability to adapt and act in a new situation be critical and self-critical.
GC -10	Ability to carry out safe activities, protection of the environment.
GC -11	Ability to work autonomously, evaluate and ensure the quality of work performed.
GC -12	Ability to plan and manage the time, make informed decisions

6.3. Professional (specialized, subject) competencies	
6.3.1. Professional competencies in specialty	
PC1-01	Ability to understand the essence and importance of information in the development of the modern information society, to understand the danger and threats that arise in this process, to follow the basic requirements of information security, including protection of state secrets.
PC1-02	Ability to solve standard tasks of professional activity on the basis of informational and bibliographic culture using information and communication technologies and taking into account the basic requirements of information security.
PC1-03	Ability to master the basic methods, ways and means of information obtaining, storing, processing.
PC1-04	Ability to have the skills of independent work on a computer and in computer networks; to carry out computer modelling of devices, systems and processes using universal packages of applied computer programs.
PC1-05	Ability to use normative and legal documentation typical for the field of information and telecommunication networks, telecommunication and radio engineering systems (laws of Ukraine, technical regulations, international and national standards, recommendations of the International Telecommunication Union, etc.).
PC1-06	Ability to carry out instrumental measurements in information and telecommunication networks, telecommunication and radio engineering systems.
PC1-07	Readiness to monitor, compliance, and ensure environmental safety.
PC1-08	Readiness to promote the implementation of perspective technologies and standards.
PC1-09	Ability to accept and develop new equipment in accordance with current standards.
PC1-10	Ability to carry out installation, adjustment, tuning, regulation, experimental testing of performance, testing and commissioning of facilities, means and equipment of telecommunications and radio engineering.
PC1-11	Ability to make up normative documentation (instructions) on the maintenance of information and telecommunication networks, telecommunication and radio engineering systems, as well as programs testing.
PC1-12	Ability to conduct work on controlling the flows of information and telecommunication networks
PC1-13	Ability to organize and implement measures for the labor protection and safety during the operation, maintenance and repair of equipment for information and telecommunication networks, telecommunication and radio engineering systems.
PC1-14	Readiness to study scientific and technical information, domestic and foreign experience on the subject of investment (or other) project; the ability to collect and analyze information for the purpose of forming the initial data for the design of telecommunication and radio engineering.
PC1-15	Ability to make calculations in the design process of constructions and facilities of information and telecommunication networks, telecommunication and radio engineering systems in accordance with the technical specification using both

	standard methods, techniques and means of automation of designing, and independently created original programs.
Competencies selected by the educational institution	
6.3.2. Competencies selected by the educational institution	
PC2-01	Knowledge and understanding: legal principles of functioning of the state and the bases of the legislation of Ukraine concerning the powers of the state, human rights and the frames of their application for ensuring the security of the state border; democratic values; systems of providing national security of Ukraine; the essence and basic issues of the ethics of armed struggle; the intent of an officer's profession.
PC2-02	Understanding of the system and processes of ensuring the state border security, the model of integrated border management, functioning of the subsystems for the development of the state border protection, ways of using forces and means, and assessing their effectiveness.
PC2-03	Ability to organize the protection of the state border in the area of responsibility of the unit, to assess its compliance with the predicted state of unlawful activity and actions of the enemy, to carry out border control and border service procedures, to act as part of border details, to conduct operational and technical measures and investigations, coercive measures, to plan and organize preventive measures.
PC2-04	Understanding of the basics of joint combat, combat operations of border units, tactics and methods of units' actions, issues of combat, resource, engineering and technical support and communication organization in the unit in different conditions of operation and various forms of operational and service activities.
PC2-05	Ability to counteract the physical and armed resistance of armed offenders, to endure physical fitness activity without reducing the professional ability to perform operational tasks.
PC2-06	Ability to use organic unit weapons during operational and service activities and the execution of combat missions.
PC2-07	Ability to drive the basic vehicles of the unit, organize the preparation of weapons, special equipment and technical means of border guarding for the use, operation and maintenance of the physical basis of their design, engineering knowledge and compliance with the requirements of a single system of design documentation.
PC2-08	To use communication facilities and software and hardware complexes, adopted in the State Border Guard Service of Ukraine, in the operational and service activity of the border guard units.
PC2-09	To have the basics of psychological knowledge, technologies of creative psychological thinking, psychological tools for research of personality and small social groups, theoretical and methodical foundations of general and military pedagogics, features of introduction of modern personality-oriented technologies of training and education of state border guard units personnel.
PC2-10	To apply the basic provisions of the administrative law on conducting proceedings in cases of administrative offenses with making up administrative procedural documents.

6.3.3. Competencies selected by students	
PC3-01	Ability and readiness to provide the process of communication organization with relevant educational documentation, programs, plans and innovative projects.
PC3-02	Ability to project activity, generalization, perception of information, statement of the current, ultimate goal of the organization of telecommunication and information systems and the choice of ways to achieve it.
PC3-03	Ability and readiness to develop systems of measures for ensuring the proper performance of the activity of the communications, automation and information department, in accordance with the norms of life safety, ergonomics and modern technologies in the field of electronics and telecommunications.
PC3-04	Ability and readiness to find the optimal solution for the communication units command, automation and protection of information, implementation of projects of radio engineering devices and telecommunication systems in well-known and non-standard situations and be responsible for them.
PC3-05	Ability and readiness to verify the real process of communication and automation in accordance with approved plans, norms and requirements, instructions and decisions.
7. Program learning outcomes	
7.1. Program learning outcomes in specialty	
PLO-01	To be able to use the knowledge and practical skills of fundamental and professionally oriented courses in the processes of analysis of telecommunication and radio engineering systems.
PLO-02	To be able to apply methodical techniques of the basis of scientific research, use applied methods of analysis and systematization of technical information in the field of electronics and telecommunications, and the formation of recommendations for improvement.
ПРН-03	To have the skills of analysis of educational and special literature, normative provisions, technical documentation for solving problems arising in professional activities.
ПРН-04	To be able to perform diagnostics, analysis, recording of indicators, conditions and results of design, operation, maintenance and repair of telecommunication and radio engineering devices.
ПРН-05	To be able to structure the technical problem in accordance with the purpose of the design and production process.
ПРН-06	To have skills of selection, analysis, adaptation, generalization and systematization of technical information related to the field of electronics and telecommunications.
ПРН-07	To be able to develop the means of control of the design and production process, guidance, work plans, schedules, explanatory notes, technological maps, schemes, manuals and other materials.
ПРН-08	To have skills in designing modules, nodes, systems, electronics and telecommunications devices and their computer simulations.

ПРН-09	To have skills of testing and putting into operation educational and production equipment and facilities, overseeing their state and functioning.
PLO-10	To be able to develop algorithms for automatic control, software and logic control, signaling, protection, using controller programming languages, or based on libraries of controller algorithms.
PLO-11	To be able to apply skills in mathematical modeling and optimization of radio engineering systems, demonstrate knowledge of the theory of signals and processes in radio engineering while developing new complex radio engineering devices and telecommunication systems and the choice of optimal solution.
PLO-12	To be able to monitor compliance with the established requirements, current norms, rules and standards in the field of electronics and telecommunications, having skills in the use of measuring instruments and equipment, determination of parameters of telecommunication and radio engineering systems depending on the conditions of their operation.
PLO-13	To be able to demonstrate knowledge and practical skills of programming and use of applied and specialized computer environments for solving the problems of designing telecommunication and radio engineering systems.
PLO-14	To be able to use a computer environment for the development of mathematical models of telecommunication and radio engineering systems.
PLO-15	To be able to install and configure the software of telecommunication and radio engineering systems.
PLO-16	To be able to carry out a selection of technical means for the design of telecommunication and radio engineering systems.
Program learning outcomes selected by educational institution	
7.2. Program learning outcomes selected by educational institution	
PLOei-01	To know the legal principles of functioning of the state and the system of ensuring the national security of Ukraine; the structure of the national security and defense sector of the state, especially the functioning and interaction of its components; bases of activity and structure of international and national organizations in the field of international relations and security of state borders in conditions of integration processes; events related to the history of border guarding, wars and military conflicts.
PLOei-02	To carry out border control and border guard services procedures, enforcement and law enforcement activities under different conditions of the situation, to develop relevant documentation, reports, and prepare procedural documents.
PLOei-03	To command general and border units (decision-making, planning, motivation and control) in the course of daily and operational and service activities, combat operations in various conditions of the situation using communication and telecommunications facilities
PLOei-04	To organize the complex functioning of the subsystems for the development of the state border protection, to apply forces and means in different conditions of the situation, all types of combat, resource and engineering.
PLOei-05	To organize the use of cynologists with service dogs in the state border protection.
PLOei-06	To apply the regular armament of the unit, carry out small arms technics and fire tasks in the amount determined by the Shooting Course of the State Border Guard Service of Ukraine.
PLOei-07	. To carry out personal safety and physical training, to use special means in the amount specified by legislative acts, the Personal Safety Instructions of the State Border Guard Service of Ukraine, the Guide to Physical Fitness Training in the

	State Border Guard Service of Ukraine.
PLOei-08	To organize measures on safety of vital functions of the unit and personnel in different conditions of the situation, to confidently apply procedures of providing the first medical aid and tactical medicine
PLOei-09	To drive vehicles in accordance with state standards, including extreme driving conditions.
PLOei-10	To organize measures of moral and psychological support, professional training of personnel, preparation of border details and units to perform appointed tasks in different conditions of the situation.
PLOei-11	To apply knowledge of the standards of the European Code of the Law Enforcemen Ethics and National Border Guard Ethics; the principles of observance of human rights, the traditions of the border service, the requirements of the standards of the border guard service and border control culture; the principles of freedom and justice; healthy lifestyle.
PLOei-12	To apply the provisions of legal acts on border issues in service activities.
7.3. Program learning outcomes selected by students	
PLOst-01	To be able to organize communication at the border unit's area of responsibility, observing all the requirements for reliability, security and stability of communication with the use of up-to-date communication and data processing technologies.
PLOst -02	To have skills of administering special software and hardware complexes, installing and configuring system and application software.
PLOst -03	To have skills of the organization of operational and technical service on the stationary and field communication centres of the State Bordergurd Service of Ukraine in accordance with the requirements of authorised instructions and orders.
PLOst -04	To be able to organize the operation of facilities, systems and communication and automation complexes, knowledge of the basic regulations of warning and restoration measures in the system of technical operation of communication devises and facilities.
PLOst -05	To have skills of communication and data transmission security, the ability to monitor compliance with the requirements of communication security.
8. Resource support for the program implementation	
Staffing	The staffing meets the licensing requirements in terms of staffing requirements for conducting educational activities in the sphere of higher education, which is confirmed by such indicators: - to implement the educational program the departments of telecommunications and radio engineering, communication, automation and information security of general engineering courses was created at the engineering and technical faculty . The Department of Telecommunications and Radio Engineering is responsible for the training of higher education graduates in this specialty ; - the working team, which is responsible for the training of higher education trainees in this specialty, consists of three workers of academic staff; - Head of the working team (the guarantor of the educational program) - candidate of technical sciences (specialty 05.12.17 - radio engineering and television systems), associate professor (head of the department), has a period of scientific and pedagogical work of 11 years. Other scientific and pedagogical workers, who are planned to be

	involved in the implementation of the educational program, have degrees and/or academic ranks, as well as a confirmed period of scientific and professional activities. It is possible to involve foreign experts and specialists of other educational and scientific institutions, establishments and organizations in the educational process on the basis of agreements / contracts / memoranda / protocols / consents concluded within the framework of international and inter-university cooperation, as well as representatives of the relevant level of qualification of the state border guard institutions, Regional Directorates, Administration of the State Border Guard Service of Ukraine.
Materiel and technical support	The materiel and technical support meets the licensing requirements in terms of technological requirements for conducting educational activities in the sphere of higher education, which is confirmed by such indicators: - provision of premises for conducting training sessions and control activities is 5.5 square meters per person for the declared contingent of students; - provision of multimedia equipment for simultaneous use in classrooms – 30%; - available social infrastructure: libraries with a reading room, dining rooms, a cultural centre, an assembly hall, sports halls and playgrounds, an occupational health facility; - provision of higher education trainees with hostels – 100%.
Information, teaching and training support	The information, teaching and training support meets the licensing requirements in terms of technological requirements for conducting educational activities in the sphere of higher education, which is confirmed by such indicators: - provision of the library with domestic and foreign specialized periodicals of the corresponding or related profile – 5 publication names; - access to databases of periodical scientific publications in English of the corresponding or related profile; - description of the educational program; - curriculum and explanatory note.
9. Academic mobility	
National credit mobility	Individual academic mobility is realized within the framework of inter-university agreements / contracts / memoranda on the establishment of scientific and educational relations to meet the needs of the development of education and science with such institutions: Lviv National Polytechnic University (Lviv), Khmelnytsky National University (Khmelnytskyi), Vinnytsia National Technical University (Vinnytsia), Military Institute of Telecommunications and Informatization of the National Technical University of Ukraine, KPI (Kyiv), the National Academy of National Guard of Ukraine (Kharkiv), the Ivan Cherniakhovskyi National Defence University of Ukraine (Kyiv), the Ivan Ohienko National University of Kamianets-Podilskyi, the Lviv State University of Internal Affairs, the Institute of Information Technologies and Training Resources of the National Academy of Pedagogical Sciences of Ukraine (Kyiv), the Hetman Petro Sahaidachnyi National Army Academy (Lviv), the Flying

	Academy of the National Aviation University, National Prosecution Academy of Ukraine (Kyiv), the Academician Stashis Scientific Research Institute for the Study of Crime Problems of the National Ukrainian Academy of Law Sciences (Kharkiv), the Institute of Department of State Guard of Ukraine of the Taras Shevchenko National University of Kyiv. In addition, leading experts from the relevant higher educational institutions of Ukraine may be involved in the management of the scientific work of the trainees on the individual conditions. It is allowed to transfer credits received in other higher educational institutions of Ukraine, if the acquired competencies are relevant.
International credit mobility	International credit mobility and international educational and scientific and technical cooperation of educational institutions are provided in accordance with signed international documents, in particular: The Memorandum of Understanding and Cooperation between Educational Institutions in a number of EU Member States and Eastern Partnership Countries (since 2017); The Protocol between the National Academy of the State Borderguard Service of Ukraine and the High School of International Relations and Public Communication (Chelm, Republic of Poland, 2011); The Memorandum of Understanding between the National Academy of the State Borderguard Service of Ukraine and the Higher School of Police (Szczytna, Republic of Poland, 2011); Annual plan of cooperation between the National Academy of the State Borderguard Service of Ukraine and the Training Centre named after the Soldiers of Border Guards (Kętrzyn, Republic of Poland).
Training of foreign students obtaining higher education	It is provided in case of conclusion of international agreements with observance of information security procedures.